

What is Claimed is:

1. A reinforcement laminate for reinforcing a substrate comprising a carrier layer, a layer of rigid reinforcement foam secured to said carrier layer, a layer of compliant foam secured to said rigid foam, said layer of compliant foam comprising a bonding layer for securing said laminate to a substrate, said rigid foam layer and said compliant foam layer being heat curable, said compliant foam layer comprising means for absorbing shrinkage strains due to heat cure of said foam layer and cooling of the substrate, and including a pattern of holes creating open passageways completely through said laminate.
2. The laminate of claim 1 wherein said carrier layer is a foil backing.
3. The laminate of claim 1 in combination with said substrate, and said compliant foam being intimately bonded directly to said substrate.

10026501-12-1901

4. The laminate of claim 3 wherein said foam layers and said carrier layer have a generally continuous contour, and at least one rib formed by said foam layers and said carrier layer forming a minor interruption of said continuous contour.
5. The laminate of claim 4 wherein said substrate includes a rib in line with said rib of said foam layers and said carrier layer.
6. The laminate of claim 5 wherein said foam layers and said carrier layer include end flanges extending in the same direction as each other and as said rib away from said continuous contour.
7. The laminate of claim 3 wherein said substrate is a vehicle part selected from the group consisting of a door, a roof, a deck lid and a fender.
8. The laminate of claim 1 wherein said laminate in its elevation view has a pair of longitu-

10023501 1052001

dinal side edges interconnected by a pair of transverse end edges and at least one of said pair of side edges and said pair of end edges is of non-straight and undulated shape.

9. The laminate of claim 8 wherein said undulated shape has a pattern of hills and valleys joined together in a smooth wavy pattern.
10. The laminate of claim 8 wherein said undulated shape has a pattern of hills and valleys in a sawtooth shape.
11. The laminate of claim 8 wherein said non-straight and undulated edges are said side edges.
12. The laminate of claim 8 wherein said non-straight and undulated edges are said end edges.
13. The laminate of claim 12 wherein said side edges are also non-straight and undulated.

10036501-21001
T06T05200T

14. The laminate of claim 8 in combination with said substrate, and said compliant foam layer being intimately bonded to said substrate.
15. The laminate of claim 14 wherein said substrate is a vehicle door.
16. The laminate of claim 1 wherein said pattern of holes comprises a plurality of uniformly and equally spaced aligned rows and columns of holes.
17. The laminate of claim 1 wherein said pattern of holes comprises a plurality of holes arranged in staggered rows and columns.
18. The laminate of claim 1 wherein said pattern of holes is randomly arranged.
19. A reinforcement laminate for reinforcing a substrate comprising a carrier layer, an expandable foam layer intimately bonded to said carrier layer to form a reinforcing unit, said reinforcing unit in its elevation view having a pair of longitudinal side edges

interconnected by a pair of transverse end edges, at least one of said pair of side edges and end edges being non-straight and undulated, and including a pattern of holes creating open passageways completely through said laminate.

20. The laminate of claim 19 wherein said undulated shape has a pattern of hills and valleys joined together in a smooth wavy pattern.
21. The laminate of claim 19 wherein said undulated shape has a pattern of hills and valleys in a sawtooth shape.
22. The laminate of claim 19 wherein said non-straight and undulated edges are said side edges.
23. The laminate of claim 19 wherein said non-straight and undulated edges are said end edges.

24. The laminate of claim 19 wherein said side edges are also non-straight and undulated.
25. The laminate of claim 19 wherein said pattern of holes comprises a plurality of uniformly and equally spaced aligned rows and columns of holes.
26. The laminate of claim 19 wherein said pattern of holes comprises a plurality of holes arranged in staggered rows and columns.
27. The laminate of claim 19 wherein said pattern of holes is randomly arranged.
28. The laminate of claim 19 in combination with said substrate, and said foam layer being intimately bonded to said substrate.
29. The laminate of claim 28 wherein said substrate is an automobile door.
30. A reinforced structure comprising a carrier layer, a layer of rigid reinforcement foam secured directly to said carrier layer, a layer of compliant foam secured directly to

said rigid foam, said layer of compliant foam comprising a bonding layer for securing said laminate to a substrate, said rigid foam layer and said compliant foam layer being heat curable, said compliant foam layer comprising means for absorbing shrinkage strains due to heat cure of said foam layer and cooling of said substrate, said substrate being a vehicle door, said compliant foam layer being mounted to said vehicle door, and including a pattern of holes creating open passageways completely through said laminate.

31. The structure of claim 30 wherein said foam layers and said carrier layer have a generally continuous contour, and at least one rib formed by said foam layers and said carrier layer forming a minor interruption of said continuous contour.

32. The structure of claim 31 wherein said foam layers and said carrier layer include end flanges.
33. The structure of claim 30 wherein said laminate in its elevation view has a pair of longitudinal side edges interconnected by a pair of transverse end edges, and at least one of said pair of side edges and said pair of end edges being of non-straight and undulated shape.

::ODMA\MHODMA\CB;176111;1

10026501 121901
10026501 121901